REMARKS

Summary of Changes Made

By this Amendment, no claims have been amended, no claims have been canceled, and no new claims have been added to the application. Accordingly, claims 1-20 are pending in the application. No new matter has been added.

Claim Rejections - 35 U.S.C. §102

In the prior Office Action, the Examiner rejected claims 1-20 under 35 U.S.C. §102(b) as being clearly anticipated by Manning et al., U.S. Pat. 5,770,559. For the reasons set forth herein, applicants respectfully submit that the rejection of claims 1-20 was improper.

Manning et al. is directed to a method of preparing a true, homogeneous solution of a pharmaceutical substance dissolved in an organic solvent in which the pharmaceutical substance is not normally soluble (see Abstract). Solubilization of the pharmaceutical substance in the organic solvent is achieved by forming a hydrophobic ion pair ("HIP") complex involving the pharmaceutical substance and an amphiphilic material (see Abstract). Manning et al. expressly states at col. 5, lines 4-13 that (emphasis added):

> With the present invention, the pharmaceutical substance and the amphiphilic material are in a true, homogeneous solution in the organic solvent. By a true, homogeneous solution, it is meant that the pharmaceutical substance, the amphiphilic material and the organic solvent form a single liquid phase. **The present invention is, therefore, distinguishable from the preparation of emulsions, micellar systems and other colloidal suspensions which comprise at least two distinct phases, with one phase being dispersed within the other phase.**

Beginning at col. 11, line 17, Manning et al. describes how the true, homogeneous solution (i.e., the organic solvent having the HIP complex dissolved therein) can be further processed to prepare pharmaceutical powders. In the particle production process described by Manning et al., no emulsions are formed. At col. 12,

lines 33-46, Manning et al. describes the powder preparation process as follows (emphasis added):

> A liquid feed solution **102** is provided having a pharmaceutical substance and an amphiphilic material dissolved together in an organic solvent, which is used as a carrier liquid for processing of the pharmaceutical substance. The liquid feed solution **102** is subjected to antisolvent precipitation **104** in which the liquid feed solution **102** is contacted with an antisolvent fluid **106**. **During the antisolvent precipitation 104, the antisolvent fluid 106 invades the organic solvent of the liquid feed solution 102, resulting in precipitation of solid particles comprising the pharmaceutical substance and the amphiphilic material.** The resulting mixture **108**, having the precipitated particles, is subjected to separation **110** in which solid particles **112** are separated from the exiting fluid **114**.

The antisolvent used in the method according to Manning et al. can be a near critical or supercritical fluid (see col. 13, lines 13-15). At col. 12, line 59 to col. 13, line 2, Manning et al. further state that (emphasis added):

> The antisolvent fluid, however, is substantially incapable of dissolving a significant portion of the pharmaceutical substance and the amphiphilic material from the liquid feed solution such that at least a significant portion of pharmaceutical substance and the amphiphilic material are, in effect, not soluble in the antisolvent fluid. Also, **the antisolvent fluid is at least partially miscible with the organic solvent such that the antisolvent fluid is capable of penetrating into the organic solvent sufficiently to cause the desired precipitation of the pharmaceutical substance and the amphiphilic material.**

Since the antisolvent fluid is at least partially miscible with the organic solvent of the liquid feed solution in the process described by Manning et al., there clearly can be no phase boundary between the antisolvent fluid and the liquid feed solution. In the absence of such a phase boundary between to these two components, there can be no emulsion formed between the antisolvent fluid and the liquid feed solution.

In contrast to the process described by Manning et al., claim 1 of the present application claims (emphasis added):

A method of producing particles comprising:
providing a supercritical fluid or compressed gas;
providing a solution comprising one or more solutes dissolved in one or more solvents;
contacting the solution and the supercritical fluid or compressed gas together **to form an emulsion, the emulsion having a continuous phase** comprising the supercritical fluid or compressed gas **and a discontinuous phase** comprising the solution;
spraying the emulsion through an orifice across a pressure drop to form spray droplets; and
removing the supercritical fluid or compressed gas and the solvent from the spray droplets to obtain particles comprising the solute.

The only other independent claim in the application (i.e., claim 15) also includes the limitation that an emulsion be formed between the supercritical fluid and the solution. This difference between the two processes alone is sufficient to overcome the rejection under 35 U.S.C. §102(b). But there is another significant difference.

Manning et al. teaches at col. 13, lines 3-13, 43-48 and 57-60 that (emphasis added):

Preferably, the antisolvent fluid 106 is a gas and the antisolvent precipitation 104 is conducted under thermodynamic conditions which are near critical or supercritical relative to the antisolvent fluid. Preferably, the antisolvent precipitation is such that the antisolvent fluid is at a reduced pressure of greater than 0.5, with the reduced pressure being the ratio of the total pressure during the antisolvent precipitation **104** to the critical pressure of the gaseous antisolvent fluid **106**. More preferably, the contacting occurs at a reduced pressure of from about 0.8 to about 1.2 relative to the antisolvent fluid.

* * *

The contacting of the liquid feed solution **102** with the antisolvent fluid **106** during the antisolvent precipitation **104** may be accomplished using any suitable contacting technique and contacting apparatus. **Preferably, the liquid feed solution 102 is sprayed as small droplets into the antisolvent fluid 106**.

* * *

The separation 110 may be accomplished using any suitable separation technique and apparatus. For example, the separation may involve simple density separation, filtration or use of a centrifuge.

Thus, the contacting and separation steps in the method according to Manning et al. are accomplished at pressures under which the antisolvent is maintained in a near critical or supercritical state. In contrast, claim 1 of the present application claims (emphasis added):

> A method of producing particles comprising:
> providing a supercritical fluid or compressed gas;
> providing a solution comprising one or more solutes dissolved in one or more solvents;
> contacting the solution and the supercritical fluid or compressed gas together to form an emulsion, the emulsion having a continuous phase comprising the supercritical fluid or compressed gas and a discontinuous phase comprising the solution;
> **spraying the emulsion through an orifice across a pressure drop to form spray droplets**; and
> removing the supercritical fluid or compressed gas and the solvent from the spray droplets to obtain particles comprising the solute.

Manning et al. clearly does not disclose, teach or suggest spraying an emulsion formed between a supercritical fluid or a compressed gas and a solution comprising one or more solutes dissolved in one or more solvents through an orifice across a pressure drop to form spray droplets as claimed. In the method according to Manning et al., the liquid feed solution is sprayed into the near critical or supercritical fluid in the form of small spray droplets, which are invaded by the supercritical fluid due to the at least partial miscibility between the supercritical fluid and the organic solvent into which the HIP complex is dissolved, to thereby precipitate the pharmaceutical substance and amphiphilic material in the form of particles, which are separated from the antisolvent/organic solvent mixture by a separation technique (e.g., filtration). This is all accomplished at high pressure. Manning et al. thus clearly fails to anticipate the present invention as claimed.

Conclusion

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. FER-14858.001.001.

Respectfully submitted,

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